

Engineering Mechanics MCQ Question Answer

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Question: 1. The force applied on a body of mass 100 kg to produce an acceleration of 5 m/s^2 , is

- Option A. 20 N
- Option B. 100 N
- Option C. 500 N
- Option D. None of these

Question: 2. The velocity ratio for the first system of pulleys is (where n is the number of pulleys.)

- Option A. n
- Option B. n^2
- Option C. 2n
- Option D. $2n - 1$

Question: 3. For a self locking machine, the efficiency must be

- Option A. Equal to 50 %
- Option B. Less than 50 %
- Option C. Greater than 50 %
- Option D. 100 %

Question: 4. The forces, which meet at one point, but their lines of action do not lie in a plane, are called

- Option A. Coplanar non-concurrent forces
- Option B. Non-coplanar concurrent forces
- Option C. Non-coplanar non-concurrent forces
- Option D. Intersecting forces

Question: 5. Least force required to draw a body up the inclined plane is $W \sin (\text{plane inclination} + \text{friction angle})$ applied in the direction

- Option A. Along the plane
- Option B. Horizontally
- Option C. Vertically
- Option D. At an angle equal to the angle of friction to the inclined plane

Question: 6. In a single threaded worm and worm wheel, the number of teeth on the worm is 50. The diameter of the effort wheel is 100 mm and that of load drum is 50 mm. The velocity ratio is

- Option A. 50
- Option B. 100
- Option C. 200

Option D. 400

Question: 7. The term 'Centroid' is

Option A. The same as centre of gravity

Option B. The point of suspension

Option C. The point of application of the resultant of all the forces tending to cause a body to rotate about a certain axis

Option D. None of the above

Question: 8. The moment of inertia of a sphere of mass m and radius r , about an axis tangential to it, is

Option A. $\frac{2mr^2}{3}$

Option B. $\frac{2mr^2}{5}$

Option C. $\frac{7mr^2}{3}$

Option D. $\frac{7mr^2}{5}$

Question: 9. The amplitude is always _____ radius of the circle.

Option A. Equal to

Option B. Less than

Option C. Greater than

Option D. None of these

Question: 10. The maximum frictional force, which comes into play, when a body just begins to slide over the surface of the other body, is known as

Option A. Static friction

Option B. Dynamic friction

Option C. Limiting friction

Option D. Coefficient of friction

Question: 11. When two elastic bodies collide with each other,

Option A. The two bodies will momentarily come to rest after collision

Option B. The two bodies tend to compress and deform at the surface of contact

Option C. The two bodies begin to regain their original shape

Option D. All of the above

Question: 12. The equivalent length of a simple pendulum which gives the same frequency as compound pendulum is

Option A. $\frac{h}{(kG^2 + h^2)}$

Option B. $\frac{(kG^2 + h^2)}{h}$

Option C. $\frac{h^2}{(kG^2 + h^2)}$

Option D. $\frac{(kG^2 + h^2)}{h^2}$

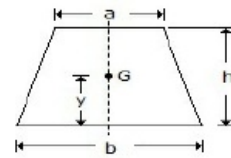
Question: 13. The total motion possessed by a body, is called

- Option A. Impulsive force
- Option B. Mass
- Option C. Weight
- Option D. Momentum

Question: 14. Mass moment of inertia of a uniform thin rod of mass M and length (l) about its mid-point and perpendicular to its length is

- Option A. $(2/3) Ml^2$
- Option B. $(1/3) Ml^2$
- Option C. $(3/4) Ml^2$
- Option D. $(1/12) Ml^2$

Question: 15. The centre of gravity of a trapezium with parallel sides a and b lies at a distance



of y from the base b , as shown in the below figure. The value of y is

- Option A. $h [(2a + b)/(a + b)]$
- Option B. $(h/2) [(2a + b)/(a + b)]$
- Option C. $(h/3) [(2a + b)/(a + b)]$
- Option D. $(h/3) [(a + b)/(2a + b)]$

Question: 16. The maximum velocity of a particle moving with simple harmonic motion is

- Option A. ω
- Option B. ωr
- Option C. $\omega^2 r$
- Option D. ω/r

Question: 17. Work done is said to be zero, when

- Option A. Some force acts on a body, but displacement is zero
- Option B. No force acts on a body but some displacement takes place
- Option C. Either (A) or (B)
- Option D. None of the above

Question: 18. A block of mass m_1 , placed on an inclined smooth plane is connected by a light string passing over a smooth pulley to mass m_2 , which moves vertically downwards as shown in the below

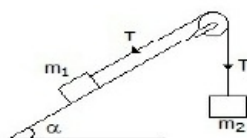


figure. The tension in the string is

- Option A. m_1/m_2

Option B. $m_1 \cdot g \cdot \sin \alpha$

Option C. $m_1 \cdot m_2 / m_1 + m_2$

Option D. $m_1 \cdot m_2 \cdot g (1 + \sin \alpha) / (m_1 + m_2)$

Question: 19. The maximum acceleration of a particle moving with simple harmonic motion is

Option A. ω

Option B. ωr

Option C. $\omega^2 r$

Option D. ω / r

Question: 20. If a number of forces act simultaneously on a particle, it is possible

Option A. Not to replace them by a single force

Option B. To replace them by a single force

Option C. To replace them by a single force through C.G.

Option D. To replace them by a couple

Question: 21. Efficiency of a screw jack is given by (where α = Helix angle, and ϕ = Angle of friction.)

Option A. $\tan(\alpha + \phi) / \tan \alpha$

Option B. $\tan \alpha / \tan (\alpha + \phi)$

Option C. $\tan(\alpha - \phi) / \tan \alpha$

Option D. None of these

Question: 22. The unit of moment of inertia of an area is

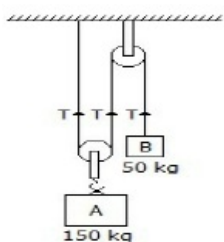
Option A. kg-m^2

Option B. kg-m-s^2

Option C. kg/m^2

Option D. m^4

Question: 23. Two blocks A and B of masses 150 kg and 50 kg respectively are connected by means of a string as shown in the below figure. The tension in all the three strings _____ be same.



Option A. Will

Option B. Will not

Option C. Either A or B

Option D. None of these

Question: 24. The horizontal range of a projectile (R) is given by

Option A. $R = u^2 \cos 2\alpha / g$

Option B. $R = u^2 \sin 2\alpha / g$

Option C. $R = u^2 \cos \alpha / g$

Option D. $R = u^2 \sin \alpha / g$

Question: 25. The static friction

Option A. Bears a constant ratio to the normal reaction between the two surfaces

Option B. Is independent of the area of contact, between the two surfaces

Option C. Always acts in a direction, opposite to that in which the body tends to move

Option D. All of the above

Question: 26. The range of a projectile is maximum, when the angle of projection is

Option A. 30°

Option B. 45°

Option C. 60°

Option D. 90°

Question: 27. The range of projectile will be maximum for a given velocity of projectile, when the angle of projection (α) is

Option A. $\beta/2$

Option B. $30^\circ + \beta/2$

Option C. $45^\circ + \beta/2$

Option D. $60^\circ + \beta/2$

Question: 28. A particle moves along a straight line such that distance (x) traversed in t seconds is given by $x = t^2 (t - 4)$, the acceleration of the particle will be given by the equation

Option A. $6t^2 - 8t$

Option B. $3t^2 + 2t$

Option C. $6t - 8$

Option D. $6t - 4$

Question: 29. Which of the following statement is correct?

Option A. The kinetic energy of a body during impact remains constant.

Option B. The kinetic energy of a body before impact is equal to the kinetic energy of a body after impact.

Option C. The kinetic energy of a body before impact is less than the kinetic energy of a body after impact.

Option D. The kinetic energy of a body before impact is more than the kinetic energy of a body after impact.

Question: 30. The forces which do not meet at one point and their lines of action do not lie on the same plane are known as

Option A. Coplanar concurrent forces

- Option B. Coplanar non-concurrent forces
- Option C. Non-coplanar concurrent forces
- Option D. None of these

Answer Sheet

1	C	
2	C	
3	B	
4	B	
5	D	
6	B	
7	A	
8	D	
9	A	
10	C	
11	D	
12	B	
13	D	
14	D	
15	C	
16	B	
17	C	
18	D	
19	C	
20	B	
21	B	
22	D	
23	A	
24	B	
25	D	
26	B	
27	C	
28	C	
29	D	
30	D	